TS700-E6/RS8

Configuration Guide

E4719

First Edition V1
May 2009

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Revision history

Revision	Revision history	Date
V1	First release of TS700-E6/RS8 configuration guide	May 2009

Safety information

Electrical Safety

- Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.
- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing any additional devices to or from the system, contact a qualified service technician or your dealer. Ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you service.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your dealer.

Operation Safety

- Servicing of this product or units is to be performed by trained service personnel only.
- Before operating the server, carefully read all the manuals included with the server package.
- Before using the server, ensure all cables are correctly connected and the power cables are not damaged. If any damage is detected, contact your dealer as soon as possible.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Place the server on a stable surface.

This product is equipped with a three-wire power cable and plug for the user's safety. Use the power cable with a properly grounded electrical outlet to avoid electrical shock.

Lithium-Ion Battery Warning

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CD-ROM Drive Safety Warning

CLASS 1 LASER PRODUCT

Heavy System

CAUTION! This server system is heavy. Ask for assistance when moving or carrying the system.

Chapter 1

This chapter describes the key features of TS700-E6/RS8. It includes the product overview and general specifications.

Product introduction

1.1 Key features

The ASUS TS700-E6/RS8 is a flexible expandability and high capacity storage server.

Leading-edge System Architecture

- Support New-Generation Intel® Xeon® Processor 5500 series with Intel® Core™ Microarchitecture (Nehalem-EP) Platform Architecture with significant total 12 DDR3 DIMMs support up to 96GB high scalability for memory intensive applications

High Storage Capacity & Flexible RAID Solutions

- Eight (8) Hot-swap HDD bays to support both SAS or SATA HDD
- Optional ASUS PIKE Upgrad kit to meet various RAID requirements

Pedestal & 5U Rack-mount Use

- Enterprise-class server features in middle-tower formfactor
- Rack-mountable use for rack environment

High Reliability

- 620W 1+1 redundant power support
- Hot-swap HDD design with advanced RAID options

Versatile I/O Options

- Flex-E technology for automatic switch between 1 PCI-E x16 and 2 PCI-E x8
- PCI-E 2.0 x16 slot for professional graphics card support
- ASUS unique MIO audio card support
- Support two PCI-X slots for IT investment protection

High Power Efficiency

- EPU (Energy Processing Unit) for optimal CPU power management

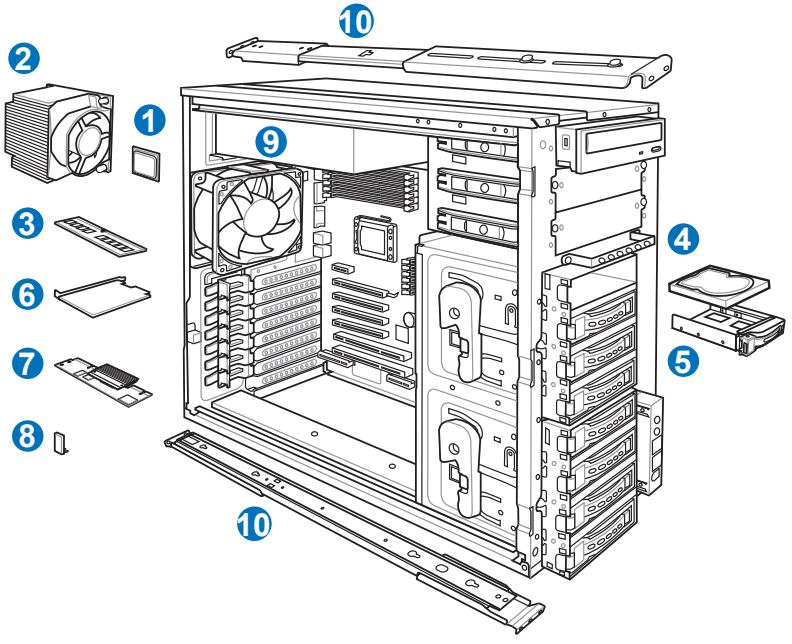
Virtualization & IT Consolidation

- Virtualization certified
- Easy deployment for virtualization with built-in Type A USB connector

Remote Control & Management

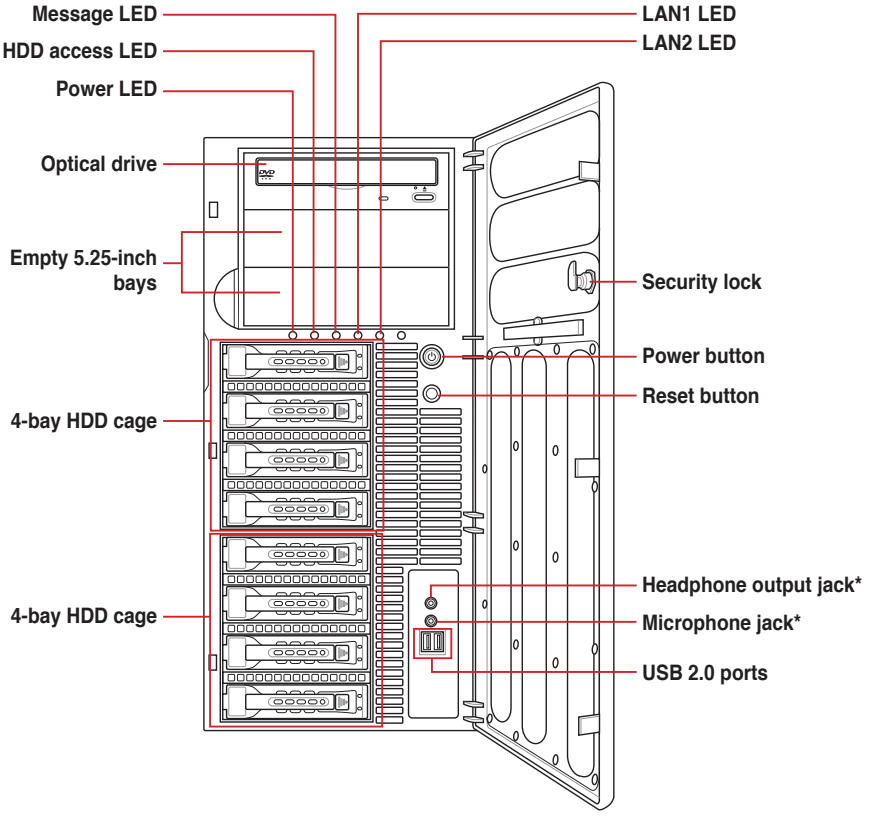
- Optional ASMB4-iKVM module for advanced server management (IPMI2.0)
- KVM over internet with OS-independent manageability

1.2 System overview



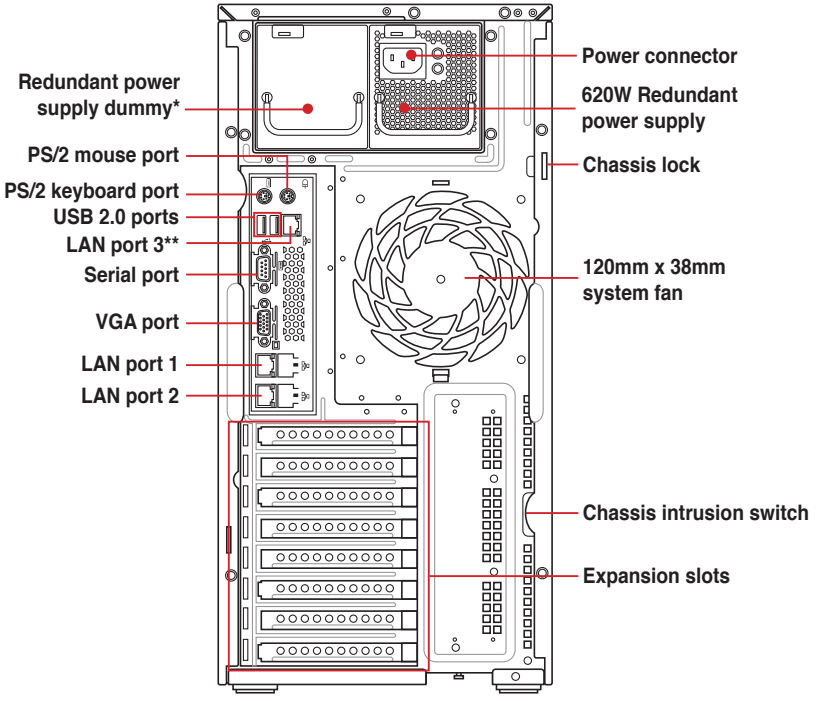
Items	Items
1. Central processing unit (CPU)	6. MIO Audio card (optional)
2. CPU heatsink and fan	7. ASUS PIKE SAS RAID card (optional)
3. System memory	8. ASUS Server management board (optional)
4. Hard disk drives	9. Redundant power supply (optional)
5. HDD trays	10. Rackmount rail kit (optional)

1.3 Front panel features



*** The audio jacks function only with an optional MIO audio card.**

1.4 Rear panel features



* The second redundant power supply is an optional item.
** This port is for the ASUS Server management board only.

1.5 System specifications

Model Name		TS700-E6/RS8
Processor / System Bus		2 x Socket LGA1366
		- Quad-Core Intel® Xeon® X5500 Series (95W) - Quad-Core Intel® Xeon® E5500 Series (80W) - Quad-Core Intel® Xeon® L5500 Series (60W / 38W)
		Quad Core / Dual Core
		QPI 4.8 / 5.86 / 6.4 GT/s
Core Logic		Intel® 5520 I/O Hub Intel® ICH10R I/O controller NEC uPD720404 PCI-X Bridge
ASUS Features	Smart Fan	√
	ASWM2.0	√
Memory	Total Slots	12 (3-channel per CPU, 6 DIMMs per CPU)
	Capacity	Maximum up to 96GB (RDIMM) Maximum up to 48GB (UDIMM)
	Memory Type	DDR3 1333 / 1066 Reg DIMM / Unbuffered DIMM with ECC
	Memory Size	1GB, 2GB, 4GB and 8GB* (RDIMM) 1GB, 2GB and 4GB (UDIMM)
Expansion Slots	Total PCI/PCI-X/ PCI-E Slots	5 or 6
	Slot Type	**Workstation Mode:** 1 x PCI-E x16 slot (x16 link) 2 x PCI-E x16 slots (x8 link) 2 x PCI-X 100/133MHz slots **Server Mode:** 4 x PCI-E x16 slots (x8 link) 2 x PCI-X 100/133MHz slots
	Additional Slot 1	1 x PIKE slot for Storage Enhancement
	Additional Slot 2	1 x MIO slot for Audio
Storage	SATA Controller	**Intel® ICH10R:** - 6 x SATA2 300MB/s ports - Intel Matrix Storage (for Windows only) (Supports software RAID 0, 1, 5 & 10) **LSI MegaRAID (for Linux / Windows)** - Supports software RAID 0, 1 & 10
	SAS Controller	**Optional:** ASUS PIKE 1068E 8-port SAS RAID card ASUS PIKE 6480 8-port SAS RAID card ASUS PIKE 1078 8-port SAS HW RAID card

(continued on the next page)

HDD Bays	**I = internal A or S = hot-swappable**	8 x Hot-swap 3.5” HDD Bays
Networking	**LAN**	2 x Intel® 82574L + 1 x Mgmt LAN
Graphic	**VGA**	Aspeed AST2050 8MB
Auxiliary Storage CD / DVD		3 x 5.25” media bays (Options: No ODD / DVD-ROM / DVD-RW)
Onboard I/O		1 x External Serial Port 2 x RJ-45 ports 4 x USB 2.0 ports (Front x 2, Rear x 2) 1 x VGA port 1 x PS/2 keyboard port 1 x PS/2 mouse port
OS Support		Windows® Server 2008 Enterprise 32 / 64-bit Windows® Server 2003 R2 Enterprise 32 / 64-bit RedHat® Enterprise Linux AS5.0 32 / 64-bit SuSE® Linux Enterprise Server 10 32 / 64-bit (Subject to change without any notice)
Anti-virus Software		Optional anti-virus CD Pack
Management Solution	**Out of Band Remote Management**	Optional ASMB4-iKVM for KVM-over-IP support
	Software	ASUS ASWM 2.0®
Dimension (HH x WW x DD)		445mm x 217.5mm x 545mm
Net Weight Kg (CPU, DRAM & HDD not included)		17.5 Kg
Power Supply		620W 1+1 Redundant Power Supply
Environment		Operation temperature: 10°C–35°C / Non operation temperature: -40°C–70°C Non operation humidity: 20%–90% (Non-condensing)

***Specifications are subject to change without notice.**

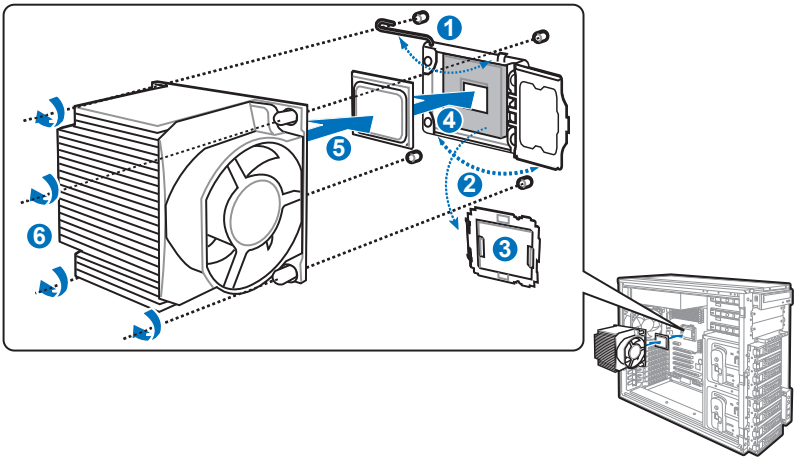
Chapter 2

This chapter lists the key components and optional accessories for the server system.

Components

2.1 Upgrading CPU and CPU heatsink

The ASUS TS700-E6/RS8 supports 1-2 Dual-core / Quad-core Intel® LGA1366 Xeon® 5500 series processor.

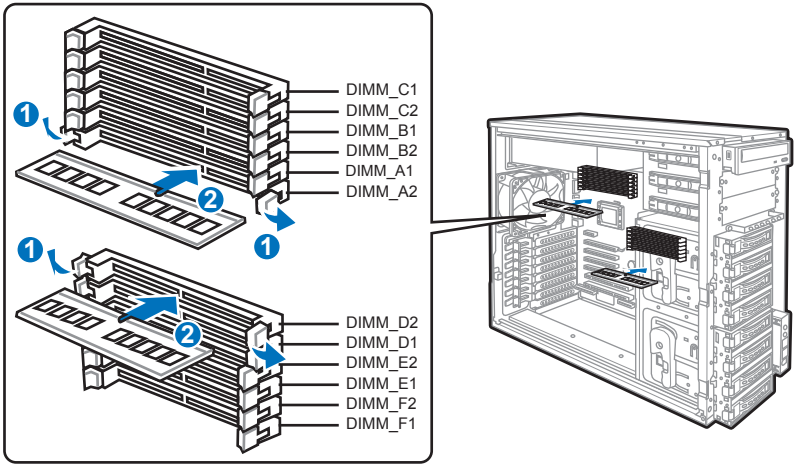


We recommend to install CPUs with the same frequency.

Order P/N	Description
90-S000U0740T	Quad-Core Intel Xeon X5570, 2.93G, QPI 6.4GT/s, 8MB L2, Single Pack with Tower/2U Heatsink
90-S000U0750T	Quad-Core Intel Xeon X5560, 2.80G, QPI 6.4GT/s, 8MB L2, Single Pack with Tower/2U Heatsink
90-S000U0760T	Quad-Core Intel Xeon X5550, 2.66G, QPI 6.4GT/s, 8MB L2, Single Pack with Tower/2U Heatsink
90-S000U0770T	Quad-Core Intel Xeon E5540, 2.53G, QPI 5.86GT/s, 8MB L2, Single Pack with Tower/2U Heatsink
90-S000U0780T	Quad-Core Intel Xeon E5530, 2.40G, QPI 5.86GT/s, 8MB L2, Single Pack with Tower/2U Heatsink
90-S000U0790T	Quad-Core Intel Xeon E5520, 2.26G, QPI 5.86GT/s, 8MB L2, Single Pack with Tower/2U Heatsink
90-S000U07A0T	Quad-Core Intel Xeon E5506, 2.13G, QPI 4.8GT/s, 4MB L2, Single Pack with Tower/2U Heatsink
90-S000U07B0T	Quad-Core Intel Xeon E5504, 2.00G, QPI 4.8GT/s, 4MB L2, Single Pack with Tower/2U Heatsink
90-S000U07C0T	Dual-Core Intel Xeon E5502, 1.86G, QPI 4.8GT/s, 4MB L2, Single Pack with Tower/2U Heatsink

2.2 Upgrading system memory

The motherboard comes with twelve (12) Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) slots.



Recommended memory configurations

Installing one CPU												
	CPU1						CPU2					
DIMM slots	C1	C2	B1	B2	A1	A2	D2	D1	E2	E1	F2	F1
1 DIMM					V							
2 DIMMs			V		V							
3 DIMMs	V		V		V							
4 DIMMs	V		V		V	V						
5 DIMMs	V		V	V	V	V						
6 DIMMs	V	V	V	V	V	V						
1 DIMM							V					
2 DIMMs							V		V			
3 DIMMs							V		V		V	
4 DIMMs							V	V	V		V	
5 DIMMs							V	V	V	V	V	
6 DIMMs							V	V	V	V	V	V

Recommended memory configurations (cont.)

Installing two CPUs

	CPU1						CPU2					
DIMM slots	C1	C2	B1	B2	A1	A2	D2	D1	E2	E1	F2	F1
1 DIMM					V							
2 DIMMs					V		V					
3 DIMMs			V		V		V					
4 DIMMs			V		V		V		V			
5 DIMMs	V		V		V		V		V			
6 DIMMs	V		V		V		V		V		V	
7 DIMMs	V		V		V	V	V		V		V	
8 DIMMs	V		V		V	V	V	V	V		V	
9 DIMMs	V		V	V	V	V	V	V	V		V	
10 DIMMs	V		V	V	V	V	V	V	V	V	V	
11 DIMMs	V	V	V	V	V	V	V	V	V	V	V	
12 DIMMs	V	V	V	V	V	V	V	V	V	V	V	V

UDIMM

CPU QPI Speed	DIMM Slot per channel	DIMM populated per channel	DIMM Type	Max Memory Speed	Rank per DIMM
4.8GT	2	1	DDR3 ECC UNB	800	Mixing SR and DR
	2	2	DDR3 ECC UNB	800	SR or DR
5.86GT	2	1	DDR3 ECC UNB	1066	SR or DR
	2	2	DDR3 ECC UNB	1066	Mixing SR and DR
6.4GT	2	1	DDR3 ECC UNB	1333	SR or DR
	2	2	DDR3 ECC UNB	1066	Mixing SR and DR

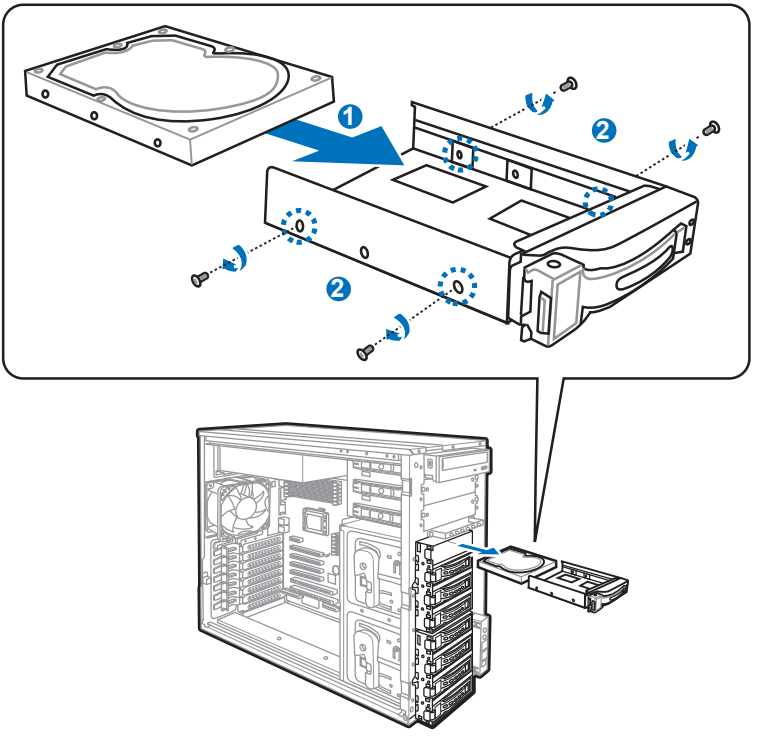
RDIMM

CPU QPI Speed	DIMM Slot per channel	DIMM populated per channel	DIMM Type	Max Memory Speed	Rank per DIMM
4.8GT	2	1	Registered DDR3 ECC	800	SR, DR, and QR
	2	2	Registered DDR3 ECC	800	SR, DR, and QR
5.86GT	2	1	Registered DDR3 ECC	1066	SR, DR, and QR
	2	2	Registered DDR3 ECC	1066	Mixing SR and DR
	2	2	Registered DDR3 ECC	800	QR only
6.4GT	2	1	Registered DDR3 ECC	1333	SR or DR
	2	1	Registered DDR3 ECC	1066	QR only
	2	2	Registered DDR3 ECC	1066	Mixing SR and DR
	2	2	Registered DDR3 ECC	800	SR, DR, and QR

Order P/N	Description
90-S000I0300T	DDR3 1333 ECC REG 1G SINGLE PACK
90-S000I0310T	DDR3 1333 ECC REG 2G SINGLE PACK
90-S000I0320T	DDR3 1066 ECC REG 1G SINGLE PACK
90-S000I0330T	DDR3 1066 ECC REG 2G SINGLE PACK
90-S000I0340T	DDR3 1333 ECC UNB 1G SINGLE PACK
90-S000I0350T	DDR3 1333 ECC UNB 2G SINGLE PACK
90-S000I0360T	DDR3 1066 ECC UNB 1G SINGLE PACK
90-S000I0370T	DDR3 1066 ECC UNB 2G SINGLE PACK
90-S000I0380T	DDR3 1333 ECC REG 1G (10 in 1)
90-S000I0390T	DDR3 1333 ECC REG 2G (10 in 1)
90-S000I0400T	DDR3 1066 ECC REG 1G (10 in 1)
90-S000I0410T	DDR3 1066 ECC REG 2G (10 in 1)
90-S000I0420T	DDR3 1333 ECC UNB 1G (10 in 1)
90-S000I0430T	DDR3 1333 ECC UNB 2G (10 in 1)
90-S000I0440T	DDR3 1066 ECC UNB 1G (10 in 1)
90-S000I0450T	DDR3 1066 ECC UNB 2G (10 in 1)

2.3 Upgrading hard disk drives

The system supports four hot-swap SATAII/SAS hard disk drives.

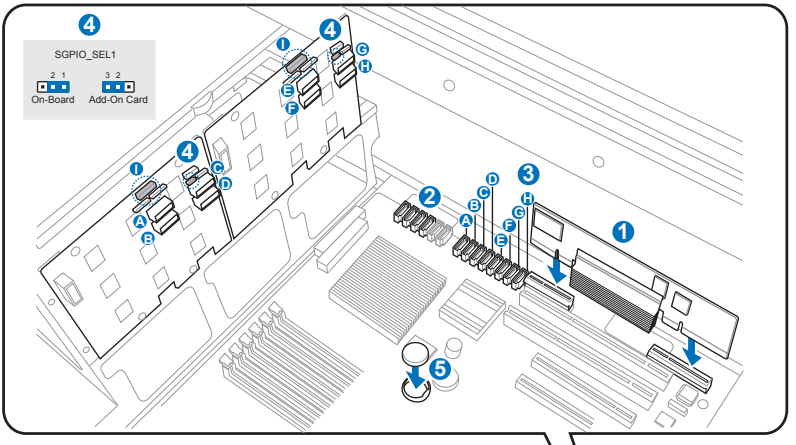


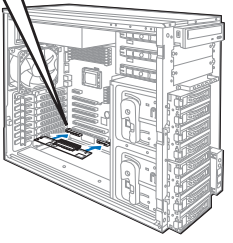
We recommend that you install identical drives of the same model and capacity for RAID configuration.

Order P/N	Description
90-S000H6210T	HDD SAS 450G 3.5” with tray (Single Pack)
90-S000H6220T	HDD SAS 300G 3.5” with tray (Single Pack)
90-S000H6230T	HDD SAS 146G 3.5” with tray (Single Pack)
90-S000H6240T	HDD SATA2 1T 3.5” with tray (Single Pack)
90-S000H6250T	HDD SATA2 750G 3.5” with tray (Single Pack)
90-S000H6260T	HDD SATA2 500G 3.5” with tray (Single Pack)
90-S000H6270T	HDD SATA2 320G 3.5” with tray (Single Pack)
90-S000H6280T	HDD SATA2 250G 3.5” with tray (Single Pack)

2.4 Installing ASUS PIKE SAS RAID card

The ASUS PIKE SAS RAID card allows users to create SAS RAID sets from SAS hard disk drives connected to the SAS connectors on the motherboard.





1. Insert the PIKE SAS RAID card into the PIKE card slot, ensuring that it is completely seated on the PIKE card slot.
2. Remove the data cables connected to the SATA connectors on the motherboard.
3. Connect the data cables, by numerial order, to the SAS connectors labeled SAS5-8 (blue) on the motherboard.
4. Set the SGPIO_SEL1 jumper on the backplane to pins 2-3 when connecting data cables to the SAS connectors on the motherboard.
5. Install the i Button*.

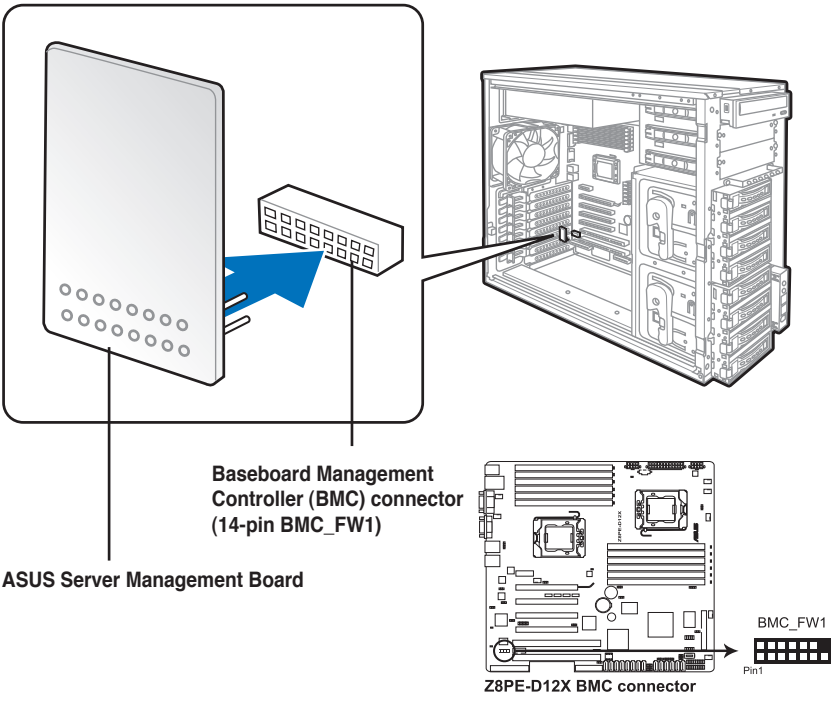
* PIKE 1078 module won't function if the i Button is not installed.

** Ensure to connect the connectors I between the two backplanes when installing the second HDD cage.

Order P/N	Description
90-C1SCU0-00UAY00Z	PIKE 1068E (8-port SAS support Firmware RAID 0,1,1E)
90-C1SCN5-00UAY00Z	PIKE 1078 (8-port SAS support Hardware RAID 0,1,10,5,50,6,60)
90-C1SDB0-00XBN00Z (10 in 1)	PIKE 6480 (8-port SAS support Firmware RAID 0,1,10,5)

2.5 Installing ASUS Server Management Board

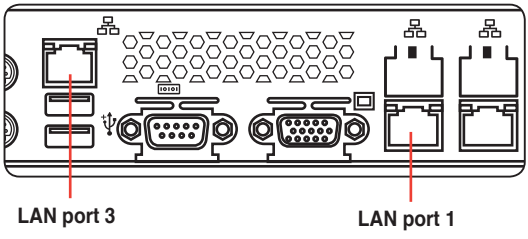
ASUS Server Management Board is an Intelligent Platform Management Interface (IPMI) 2.0-compliant board that allows users to monitor, control and manage a remote server from the local or central server in local area network (LAN).



ASMB4-iKVM

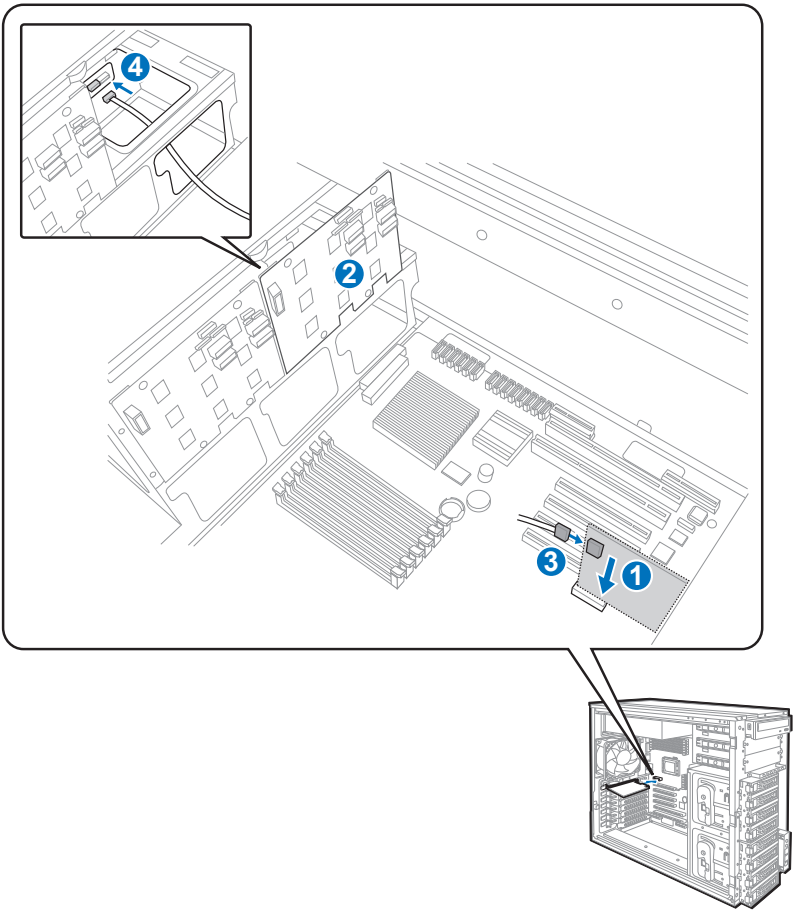
- Remote real-time access to servers with full control by keyboard, video monitor and mouse (KVM) of a single local computer from anywhere at any time. In addition, KVM function is based on BIOS-level access, therefore, even the server OS is down, the KVM module can still work to provide around-the-clock remote monitor and diagnosis through GUI (Web-based Graphical User Interface).
- Advanced server management functions including “remote power on/off/reset”, “remote hardware health monitoring” and “system event log”.
- Allows administrators to share the date saved in a local drive (floppy, CD/DVD-ROM, flash device, HDD) to target servers, which makes data-sharing convenient.

We recommend to use LAN port 3 (dedicated LAN) or LAN port 1 (shared LAN) for server management.



Order P/N	Description
90-C1SD80-00UAN00Z	ASMB4-iKVM Module (6 in 1)

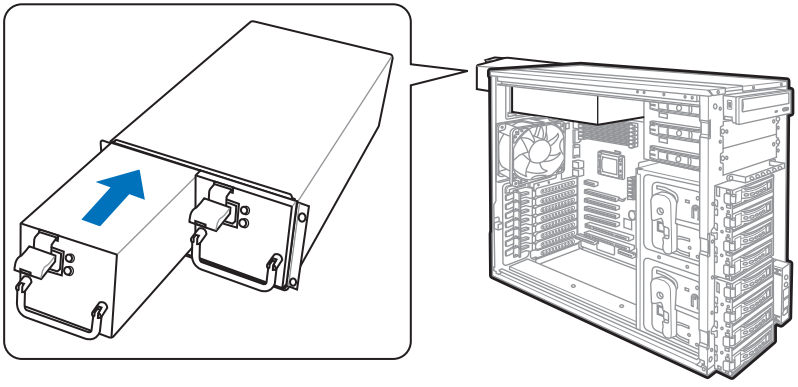
2.6 Installing MIO Audio card



1. Install the MIO audio card to the onboard MIO1 slot.
2. Remove the SATA/SAS backplane. Refer to the user guide for details.
3. Connect one end of the audio cable to the AAFP connector on the audio card.
4. Connect the other end of the audio cable to the front panel connector on the server chassis.

2.7 Upgrading power supply unit

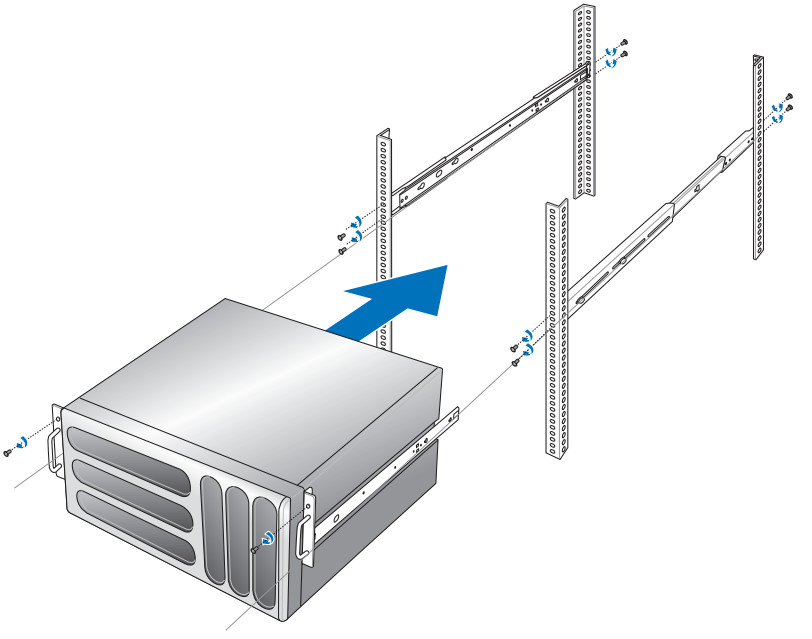
620W 1+1 hot-swap redundant power supply eliminate system and application downtime by redundancy power backup



Remove the dummy power supply module before installing the second redundant power supply.

Order P/N	Description
90-S4QPW0010T	TS700-E6/RS8 RPS 620W Module

2.8 Rackmount rail kit



Order P/N	Description
90-S00SP0280T	Rail Kit (Ball Bearing) for TS700-E6 Series

2.9 OS support list

OS support list
Windows® Server 2008 Enterprise 32/64-bit
Windows® Server 2003 Enterprise 32/64-bit
RedHat® Enterprise Linux AS5.0 32/64-bit
SuSE® Linux Enterprise Server 10 32/64-bit

Order P/N	Description
90-S00SW7140T	Windows® Server 2008 STD 64-bit ENG
90-S00SW7150T	Windows® Server 2008 STD 64-bit TCH